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IS 11610 (1986): Rubber rollers for offset printing [MED 25: Printing Machinery]

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Indian Standard

SPECIFICATION FOR RUBBER ROLLERS FOR OFFSET PRINTING

Printing Machinery Sectional Committee, EDC 86; Offset Printing Machinery Subcommittee, EDC 86 : 2 [Ref : Doc : EDC 86 (4037)]

1. Scope — Specifies requirements pertaining to rubber rollers for use in offset printing machines of various sizes and types.

2. Types — Rubber rollers used as forme, transfer or intermediate, ductor or vibrator rollers for inking and damping systems of offset printing machines.

3. Nomenclature — For the purpose of specification, the various parts of a roller shall be termed as indicated in Fig. 1.

3.1 In case of a built-up construction, the shell (tube) fitted with the flanged shanks at both ends either by welding or by shrink fitting shall be termed as the roller blank.

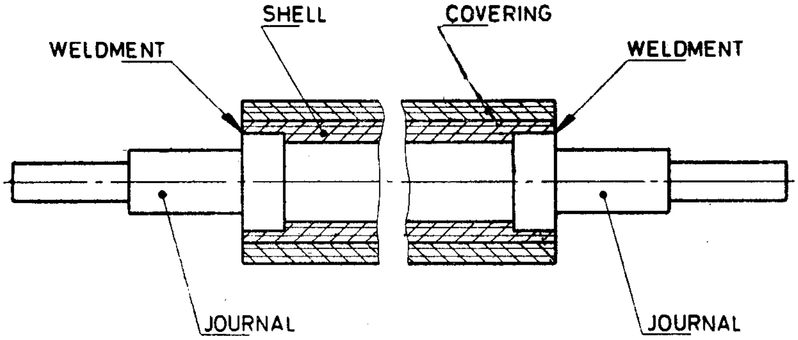

FIG. 1 NOMENCLATURE

3.2 For one piece construction, the solid spindle (without covering) shall be termed as the roller blank (*see* Fig. 2).

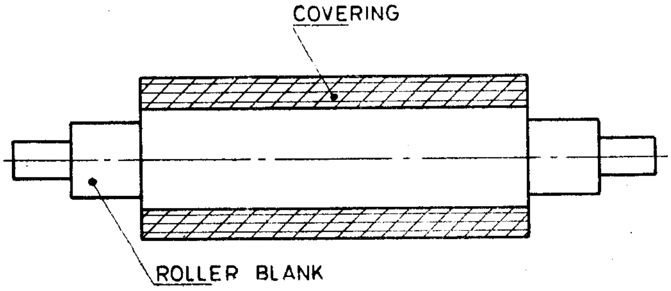

FIG. 2 RUBBER ROLLERS BLANK WITH SOLID SPINDLE

3.2.1 In case of hollow rubber rollers, the shell shall be termed as rubber roller blank (*see* Fig. 3).

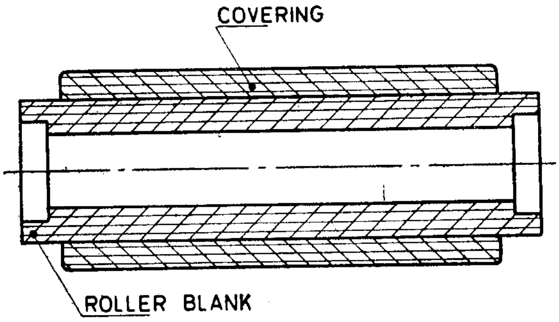

FIG. 3 RUBBER ROLLER BLANK WITH HOLLOW SPINDLE

Adopted 20 March 1986

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Gr 2

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4. Material

4.1 *Spindle*

4.1.1 Solid spindles shall be made from mild steel conforming to IS : 226-1975 'Specification for structural steel (standard quality) (*first revision*)' or Grade 1 of IS : 7283-1974 Specification for hot rolled bars for production of bright bars'.

4.1.2 Hollow spindle shall be made from steel tubes conforming to IS : 3601-1966 'Specification for steel tubes for mechanical and general engineering purposes'.

4.2 *Covering* — For rubber rollers used as inking rollers, the material for covering shall be good quality nitrile (acrylo-nitrile butadyne) rubber of shore A hardness as indicated in Table 1, with natural resistance to cleaning material, namely, kerosene or petrol as well as to solvents used in printing inks, in as much as the change in form, shape or hardness and no excessive wear takes place when in regular contact with such media.

4.2.1 For rubber rollers for use as water rollers, the rubber used shall have high resistance to alcohol and water and shall be of shore hardness as indicated in Table 1.

TABLE 1 HARDNESS FOR RUBBER ROLLERS

(*Clauses* 4.2 *and* 4.2.1)

Types	Shore A Hardness
Ink forme roller	25 to 32°
Transfer rollers	28 to 32°
Ink vibrator rollers	28 to 32°
Damping forme rollers	22 to 26°
Damping vibrator rollers	22 to 26°

5. Dimensions

5.1 As for diameter and length of the blank, sizes shall be generally guided by the design parameters of the printing machine, with special attention to high strength in bending.

5.2 Built-up roller blanks shall have a minimum tube wall thickness of 4 mm.

5.3 Spindle surface shall be rough-turning finished in the form of a helix with a close pitch, 0·5 to 1 mm to ensure a good holding of the outer covering.

5.4 Minimum thickness of covering shall be

$7 \substack{-1 \\ +0}$ mm up to 50 mm diameter of rubber rollers

$10 \substack{-1 \\ +0}$ mm above 50 mm diameter of rubber rollers

6. Tolerance

6.1 Dimensional tolerance shall be

on diameter : + 0·1 to + 0·6 mm

on length : ± 3 mm

6.2 *Concentricity* — 0·1 mm total indicator reading (TIR), checked at centre of the covering length and at 2 ends of covering, with respect to the axis of the journals.

6.3 *Taper* — 0·05 mm over a length of 1 000 mm with respect to axis of and journals.

7. Workmanship — For rollers operating at higher speed (above 2 m/s peripheral speed) the roller blanks shall preferably be dynamically balanced prior to rubberizing.

8. Finish

8.1 Damping rollers shall be of fine-ground finish. Light grinding stone flicks, light chatter marks or grinding traces which are visible but not perceptable, by touch, are permissible. Imperfections in the surface, that is, holes, ridges, swelling, turning marks, or embedded foreign particles shall not be acceptable.

8.2 Inking rollers shall have a good grinding finish followed by a polishing operation to give it a velvet-like surface. It shall be free from all imperfections and defects as mentioned in **8.1**.

9. Test

9.1 Shore hardness testing shall be done at three points on the periphery 120° apart at three positions — one at the centre of the covering length and at two other points approximately 1/10 of covering length from either end.

9.2 Since hardness can be affected by temperature variation, the same test temperature shall be used throughout any one test or series of tests for comparison. Test temperature recommended is 27 ± 2°C.

9.3 Rubber rollers shall not loose its form or get damaged at working temperature up to 60°C.

10. Treatment — All exposed metal faces of the core shall be given a suitable rust preventive coating.

11. Marking — Manufacturer's name, part number, date of manufacture and roller diameter shall be stamped in a convenient place on the periphery of shank.

11.1 *ISI Certification Marking* — Details available with the Indian Standards Institution.

12. Preservation and Packing

12.1 Rollers shall be individually cleaned and covered with opaque paper and packed in corrugated sheets before packing in wooden boxes, with journals resting in special fittings to ensure against any damage to the covering as well as to any loss of geometrical accuracy. These shall be stored either horizontally or vertically.

12.2 For better preservation, rollers shall be stored in the dark with a relative humidity of about 65 percent.

EXPLANATORY NOTE

In the preparation of this standard, assistance has been derived from;

a) ISO 6123/1-1982 'Rubber or plastics covered rollers — Specifications — Part 1 Requirement for hardness';

b) ISO 6123/2-1982 'Rubber or plastics covered rollers — Specifications — Part 2 Classification of surface characteristics'; and

c) ISO 6123/3-1983 'Rubber or plastics covered rollers — Specifications — Part 3 Dimensional tolerances'.

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